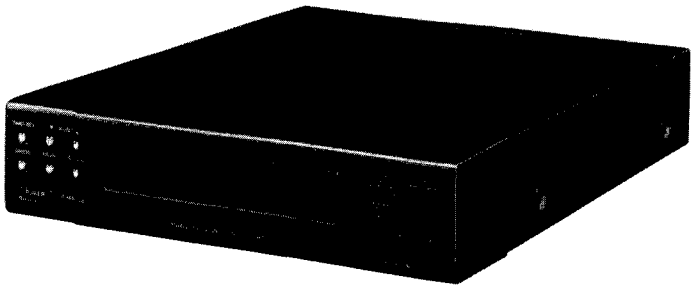
ORDER NO. AD9104083C8

Service Manual

LW/MW/FM Stereo Tuner

Tuner

ST-CH7L



Color

(K)	Black Type

Areas

Country Code	Area	Color
(E)	Continental Europe.	(K)
(GC)	Asia, Latin America, Middle Near East and Africa.	
(GN)	Oceania.	

Because of unique interconnecting cables, when a component requires service, send or bring in the entire system.

System: SC-CH7

■ SPECIFICATIONS

(DIN 45 500)

■ FM TUNER SECTION

Frequency range	87.50~108.00 MHz (0.05 MHz step)
Sensitivity	1.5 µV (IHF, usable)
S/N 30 dB	1.5 µV (75Ω)
S/N 26 dB	1.3 µV (75Ω)
S/N 20 dB	1.2 µV (75Ω)
IHF 46 dB stereo quieting sensitivity	28 µV (75Ω)
Total harmonic distortion	
MONO	0.2%
STEREO	0.3%
S/N	
MONO	60 dB (74 dB, IHF)
STEREO	58 dB (70 dB, IHF)
Frequency response	20 Hz~15 kHz, +0.5 dB~−1.5 dB
Alternate channel selectivity ±400 kHz	50 dB
Stereo separation 1 kHz	40 dB
10 kHz	30 dB
Channel balance (250 Hz~6,300 Hz)	±1.5 dB
Limiting point	1.2 µV
Bandwidth	
IF amplifier	180 kHz
FM demodulator	1000 kHz
Antenna terminal	75Ω (unbalanced)

■ LW/MW TUNER SECTION

Frequency range	
MW	522~1611 kHz (9 kHz-step)
	530~1620 kHz (10 kHz-step)
LW	144~288 kHz (9 kHz-step)
	146~290 kHz (+2 kHz-shift)
Sensitivity (S/N 20 dB)	
MW	20 µV, 300 µV/m
LW	50 µV
Selectivity (±9 kHz)	
MW	(at 999 kHz) 50 dB
LW	(at 216 kHz) 50 dB

■ TIMER SECTION

Clock	Quartz-lock type
	24-hour indication
Functions	24-hour programmable;
	weekly (1 time)
	once only (1 time)
	sleep (1~120 min., 1-min. intervals)
Setting intervals	1 minute~23 hours, 59 minutes
	(at 1 min. intervals)

■ GENERAL

Power consumption	8 W
Dimensions (W×H×D)	215×55×295 mm
	(8 15/32″×2 5/32″×11 5/8″)
Weight	1.4 kg (3.0 lb.)

Notes:

1. Total harmonic distortion is measured by the digital spectrum analyzer.
2. Specifications are subject to change without notice.
3. Weight and dimensions shown are approximate.

System	Tuner	Amplifier	CD Player	Cassette Deck	Speakers
SC-CH7	ST-CH7L	SU-CH7	SL-CH7	RS-CH7	SB-CH7

Technics / Panasonic

(E) (GC) (GN)

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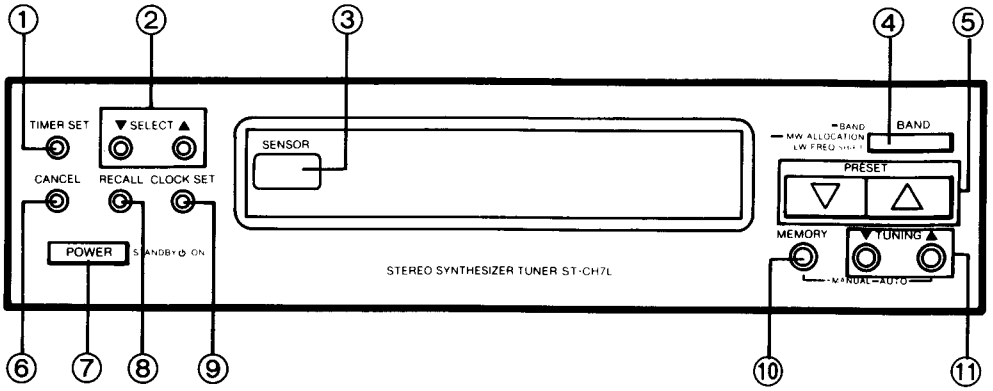
Note:
Refer to the service manual for Model No. SU-CH7, Order No. AD9104082C8 for information on ACCESSORIES, INSTALLATION OF THE SYSTEM, CONNECTIONS and PACKAGING.

■ LOCATION OF CONTROLS



Tuner: control section

① Timer set button (TIMER SET)
This button is used when making the timer setting.

② Timer select buttons (▼ SELECT ▲)
These buttons are used when setting the time. And when making the timer setting, to select the type of timer operation, the day, the time, etc.

③ Remote signal sensor (SENSOR)

④ Band select button (BAND)
This button is used to select either the MW, LW or FM band.

⑤ Preset-tuning buttons (▽ PRESET △)
These buttons are used to select channel numbers for a broadcasting station which has been stored in the tuner's memory.

⑥ Timer cancel button (CANCEL)
This button is used to cancel the timer setting.

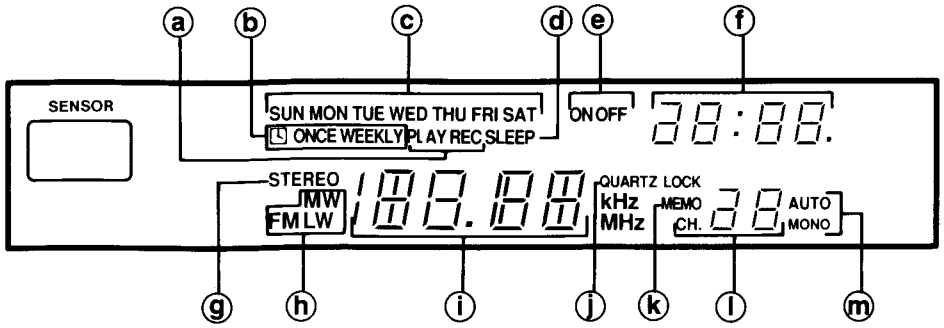
⑦ Power "STANDBY ⏻/ON" switch (POWER STANDBY ⏻ /ON)
This switch switches ON and OFF the secondary circuit power only. The unit is in the "standby" condition when this switch is set to the STANDBY ⏻ position. Regardless of the switch setting, the primary circuit is always "live" as long as the power cord is connected to an electrical outlet.

⑧ Timer setting confirmation button (RECALL)
This button is used to confirm the timer setting.

⑨ Clock set button (CLOCK SET)
This button is used to set the present time.

⑩ Memory button (MEMORY)
This button is used when presetting broadcast station frequencies into memory.

⑪ Tuning buttons (▼ TUNING ▲)
These buttons are used for tuning the desired broadcast station.



Tuner: display section

ⓐ Timer play/recording indicator (PLAY, REC)
This indicator shows that timer play mode or timer recording mode is activated.

ⓑ Timer mode-indicator (⏲ ONCE, WEEKLY)
This indicator shows the timer operation mode (ONCE or WEEKLY).

ⓒ Day display (SUN–SAT)
This display shows the present day, or the day the timer has been set for, if used.

ⓓ Sleep indicator (SLEEP)
Illuminates when the sleep timer is activated.

ⓔ Timer ON/OFF indicator (ON, OFF)
This indicator shows whether the times for timer switch-ON and switch-OFF have been set.

ⓕ Time display
This display shows the present time, or the time the timer has been set for.

ⓖ FM stereo indicator (STEREO)
This indicator automatically illuminates when an FM stereo broadcast is being received. It will not illuminate if the FM mode button is used to select monaural mode.

ⓗ Band indicator (FM, MW, LW)
Illuminates to show which band is selected.

ⓘ Digital frequency display
Displays the broadcast frequencies.

ⓙ Quartz lock indicator (QUARTZ LOCK)
This indicator illuminates when the unit is precisely tuned to a broadcast station.

ⓚ Memory indicator (MEMO)
This indicator illuminates when the memory button is pressed.

ⓛ Preset channel display
This display shows the channel number selected by the preset-tuning buttons.

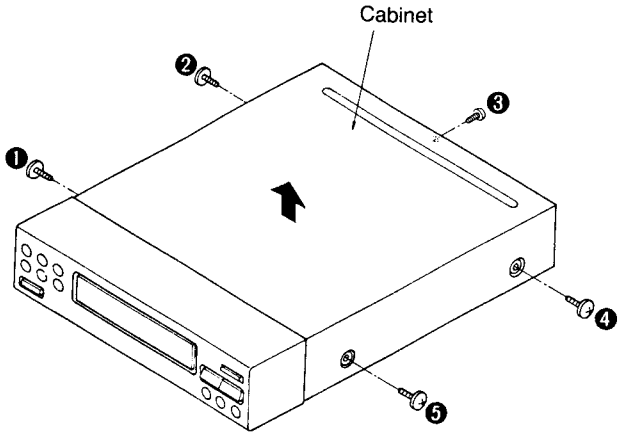
ⓜ FM mode indicator (AUTO, MONO)
When FM broadcasts are being received, usually the "AUTO" indication is illuminated. When the FM mode is set to monaural, "MONO" illuminates.

■ DISASSEMBLY INSTRUCTIONS

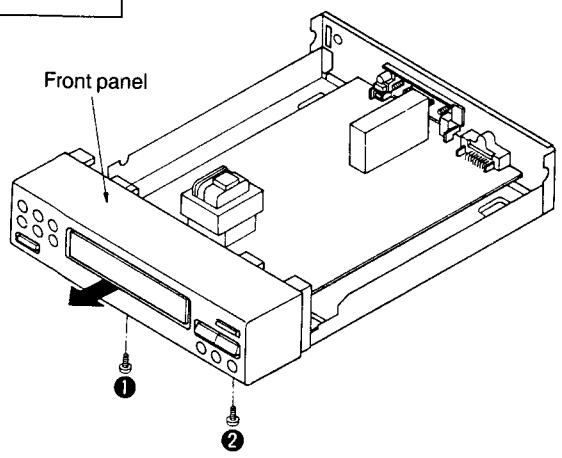
"ATTENTION SERVICER"
Some chassis components may have sharp edges. Be careful when disassembling and servicing.

Ref. No. 1	Removal of the Cabinet
Procedure 1	

●Remove the 5 screws (❶~❺).

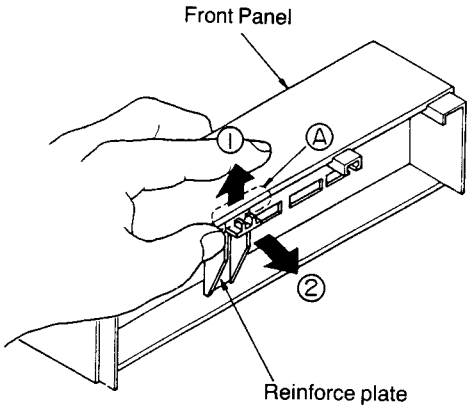


Ref. No. 2	Removal of the Front Panel
Procedure 1→2	



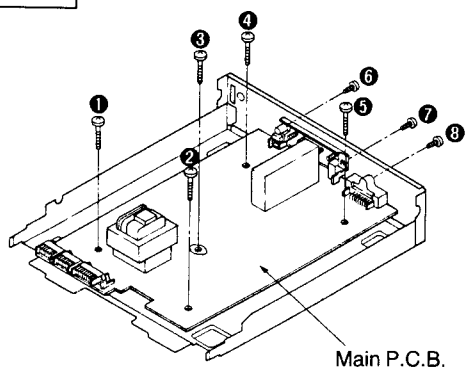
1. Remove the 2 screws (❶, ❷).
2. Remove the front panel in the direction of arrow.

Ref. No. 3	Removal of the Operation P.C.B.
Procedure 1→2→3	

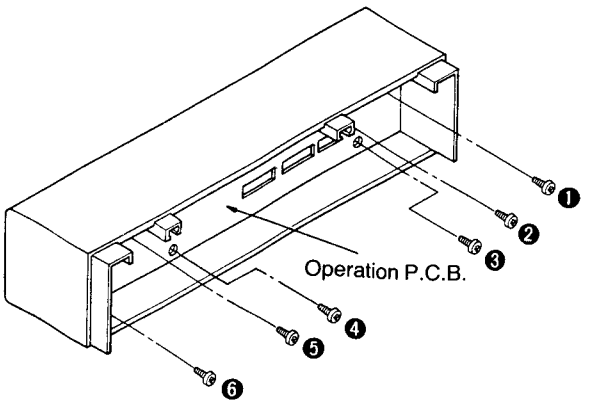


1. Pull up the position Ⓐ of the front panel in the direction of the arrow ①, and then remove the reinforce plate in the direction of the arrow ②.

Ref. No. 4	Removal of the Main P.C.B.
Procedure 1→2→4	



●Remove the 8 screws (❶~❽).



2. Remove the 6 screws (❶~❻).

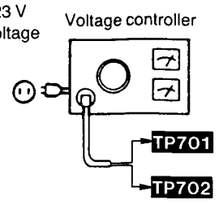
■ MEASUREMENTS AND ADJUSTMENTS

This TUNER (ST-CH7L) is powered by the amplifier (SU-CH7). To adjust it or check operations as a separate unit, follow the steps below.

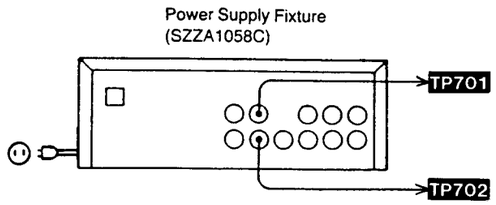
1. **Apply a power supply voltage of AC 23 V to TP701 and TP702.**
2. **Power supply switch: ON**

HOW TO CONNECT

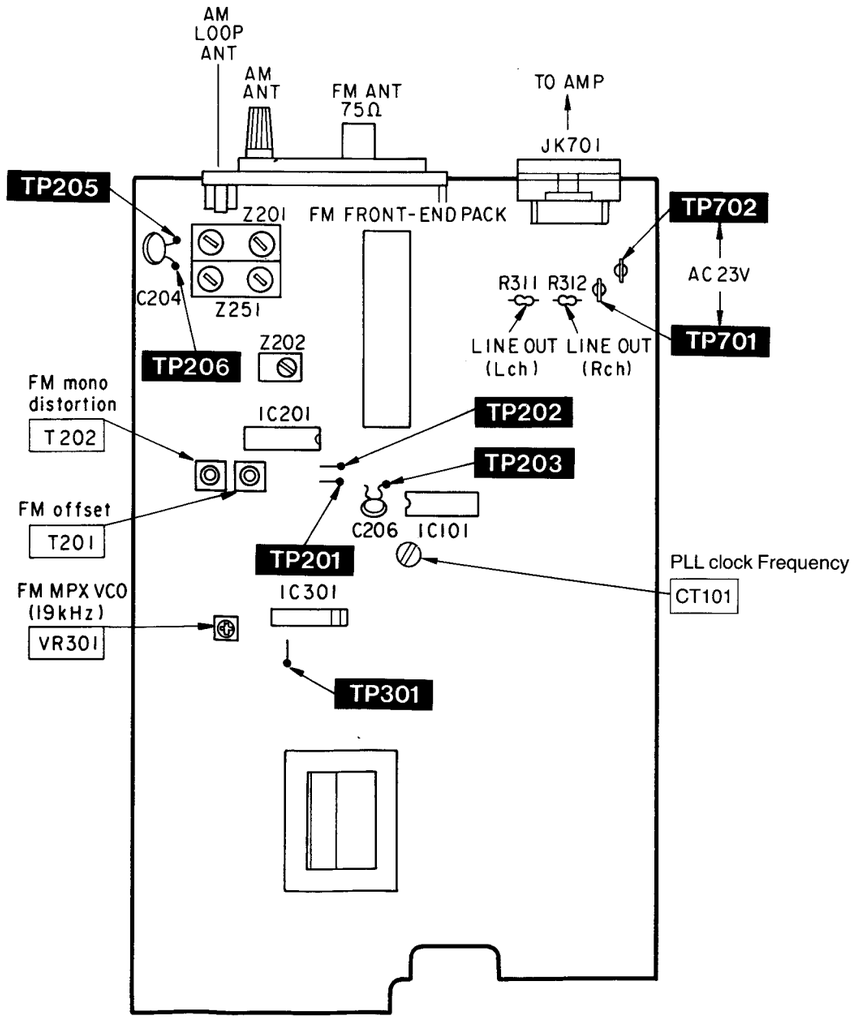
Note:
Apply a power supply voltage of AC 23 V to TP701 and TP702 by using a Voltage Controller. If it is not available, use a Power Supply Fixture (SZZA1058C) instead.



OR



●ADJUSTMENT POINT



●FM ADJUSTMENT

Control positions and equipment used

- FM signal generator (FM-SG)
- Stereo modulator
- Distortion analyser
- DC electronic voltmeter (EVM)
- Frequency counter
- Choke coil (100 µH)
- Resistor (100 kΩ)

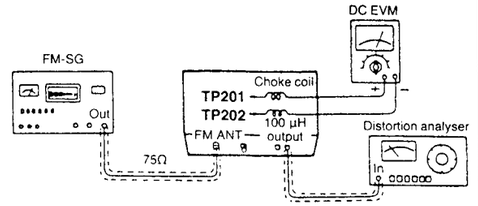
Note: For Z201 (AM ANT and OSC coil), Z202 (AM-IFT), they are supplied as adjusted parts. So, do not turn the cores of the parts. If is not necessary to adjust the AM circuit.

FM OFFSET VOLTAGE AND MONO DISTORTION ADJUSTMENT

1. Test equipment connection is shown in figure.
2. Set the unit to **"FM"** mode.
3. Set the radio frequency display and signal generator to **100.10 MHz**.
4. Adjust the core of **T201** so that the voltage measured in signal mode is **0 mV (0±20 mV)** in 300 mV range.
5. Adjust **T202** so that the distortion factor of L-CH and R-CH is minimized.
6. Repeat steps 4 and 5.

Note: The adjusting screwdriver used should be made of resin.

FM SIGNAL GENERATOR CONDITION
Modulation 100%
Modulation frequency..... 1 kHz
Output level ..... 66 dB



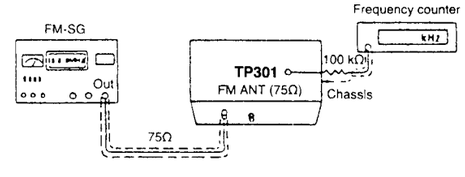
FM MPX VCO ADJUSTMENT

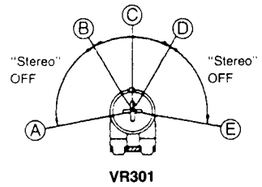
1. Test equipment connection is shown in figure.
2. Set the unit to **"stereo"** position.
3. Set the radio frequency display and signal generator to **100.10 MHz**.
4. Adjust **VR501** for **19 kHz±30 Hz** on frequency counter reading.

USING ALTERNATE SYSTEM

1. Receive the stereo broadcast.
2. Adjust **VR301** until stereo indicator lights up. Fix the arm of **VR301** as shown in gifure.

FM SIGNAL GENERATOR CONDITION
Modulation 100%
Modulation frequency .... 0 kHz
Output level ..... 66 dB



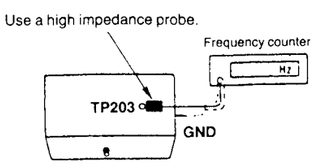


VR301

Ⓐ–Ⓑ, Ⓓ–Ⓔ .... "Stereo" OFF position
Ⓑ–Ⓓ .... "Stereo" ON position (Indicator lighting)
Ⓒ ..... Adjust point of pilot circuit

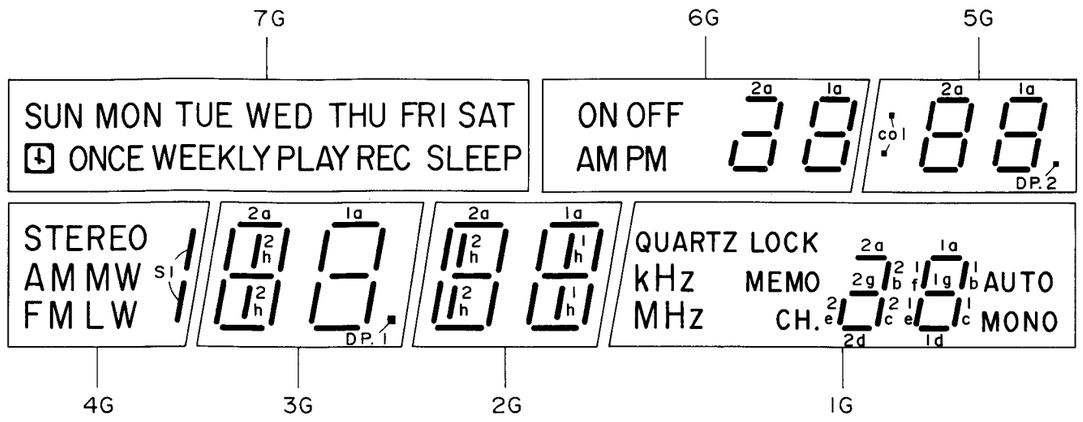
PLL CLOCK FREQUENCY ADJUSTMENT

1. Test equipment connection is shown in figure.
2. Adjust **CT101** for **2070±0.010 kHz (2050±0.010 kHz...GC only)** on frequency counter reading.



■ DESCRIPTION OF FL PANEL [FL901 (RSL0096-F)]

•GRID ASSIGNMENT



•PIN CONNECTION

PIN NO.	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
CONNECTION	F2	F2	N P	P7	P15	P14	P13	P12	P11	P10	P9	P8	P0	P1	P2	P3	P4	P5	P6	P16	NC	1G	2G	3G	4G	5G	6G	7G	NP	F1	F1

Note: 1) F1, F2 ..... Filament
2) NP ..... No pin
3) 1G~8G ..... Grid

•ANODE CONNECTION

	7G	6G	5G	4G	3G	2G	1G
P0	SLEEP	AM	2d	LW	2d	2d	CH.
P1	—	PM	2e	FM	2e	2e	MHz
P2	WEEKLY	2c	2c	AM	2c	2c	kHz
P3	—	—	2g	MW	2g	2g	2a, 2d, 2e, 2g
P4	ONCE	—	2f	—	2f	2f	MEMO
P5	—	2b	2b	—	2b	2b	AUTO
P6	⏲	2a, 2d, 2e, 2g	2a	STEREO	2a	2a	QUARTZ LOCK
P7	PLAY	ON	col	S1	2h	2h	2b
P8	WED	1d	1d	—	1d	1d	1d
P9	SAT	1e	1e	—	1e	1e	1e
P10	TUE	1c	1c	—	1c	1c	1c
P11	FRI	1g	1g	—	1g	1g	1g
P12	MON	1f	1f	—	1f	1f	1f
P13	THU	1b	1b	—	1b	1b	1b
P14	SUN	1a	1a	—	1a	1a	1a
P15	REC	OFF	DP, 2	—	DP, 1	1h	2c
P16	—	—	—	—	—	—	MONO

■ FUNCTIONS OF IC TERMINALS

•IC901 (MN187125STT1)

Pin No.	Mark	I/O Division	Function
1	VDD	I	Power supply (+B)
2	OSC2	I	Connected to crystal oscillator (X901) (4.19 MHz)
3	OSC1	O	
4	VSS	I	Connected to ground terminal
5	X1	I	Connected to ground terminal
6	X0	O	Not connected
7	KEY2	I	Key scan signal input
8	KEY1 BIN	I	Connect to ground terminal
9	CR	I	Not connected
10	$\overline{\text{STEREO}}$	I	Stereo input Inputs when stereo signal receipt "L", monaural signal receipt "H".
11	DIR	I	When broadcasting receipt "L", stereo/normal broadcasting receipt "H". Not connected
12	MONO	O	Auto/mono change over terminal.
13 14	$\overline{\text{MFRO}}$	O	Remote control signal terminal. Not connected
15	INT	I	Remote control input
16	POWER DOWN	I	Power supply level detection
17	$\overline{\text{SDC}}$	O	DTS selective output terminal. Not connected
18	$\overline{\text{BM}}$		
19	POWER	O	AC output Put out for "H" when moving. For cutting relay dirive of main power supply. Becomes "H" when PLL is moving. Reverse when put the power key.
20	TB	I	Band data input
21	RESET	I	Reset signal input Input of reset for micro computer stand

Pin No.	Mark	I/O Division	Function
22	SBT1	O	Clock terminal for serial data.
23	CE	O	Serial transmission operation Chip enable terminal
24	SBO1	O	Serial data signal output
25	CLOCK OUT	O	External control clock signal input-output
26	CLOCK IN	I	
27	DATA OUT	O	External control data signal output
28	NC	—	Not connected
29	CM	I	Connectd to ground terminal
30	DATA IN	I	External control data signal input
31	SD	I	Input for stop signal during auto tuning. Stops auto tuning at high level. Receipt: H, No signal: L
32	MUT	O	Output for erasing shock noise when lock-off at PLL. <Muting outut> 1. Power switch "off". 2. Frequency change (up/down, FM⟷AM⟷TV) Put out "H" when those of above two.
33	A IN	I	Not connected
34	B IN		
35 ~ 37	KS1 ~ KS3	O	Key scan signal output
38 ~ 45	DGT0 ~ DGT7	O	Digit signal output to FL display
46	P71	I	Serial data signal input
47 • 48 ~ 63	P70 • SEG15 ~ SEG0	O	Segment signal output to FL display
64	VPP	I	FL motor power supply

■ SCHEMATIC DIAGRAM (Parts list on pages 17~20.)

Notes:

- ●S901, 902 : Preset channel switch. (S901: Up, S902: Down)
- ●S903 : Band select switch.
- ●S904 : Memory switch.
- ●S905, 906 : Tuning switch. (S905: Up, S906: Down)
- ●S907, 908 : Timer select Switch. (S907: Up, S908: Down)
- ●S909 : Timer set switch.
- ●S910 : Clock set switch.
- ●S911 : Timer setting confirmatin switch.
- ●S912 : Timer cancel switch.
- ●S913 : Power switch.

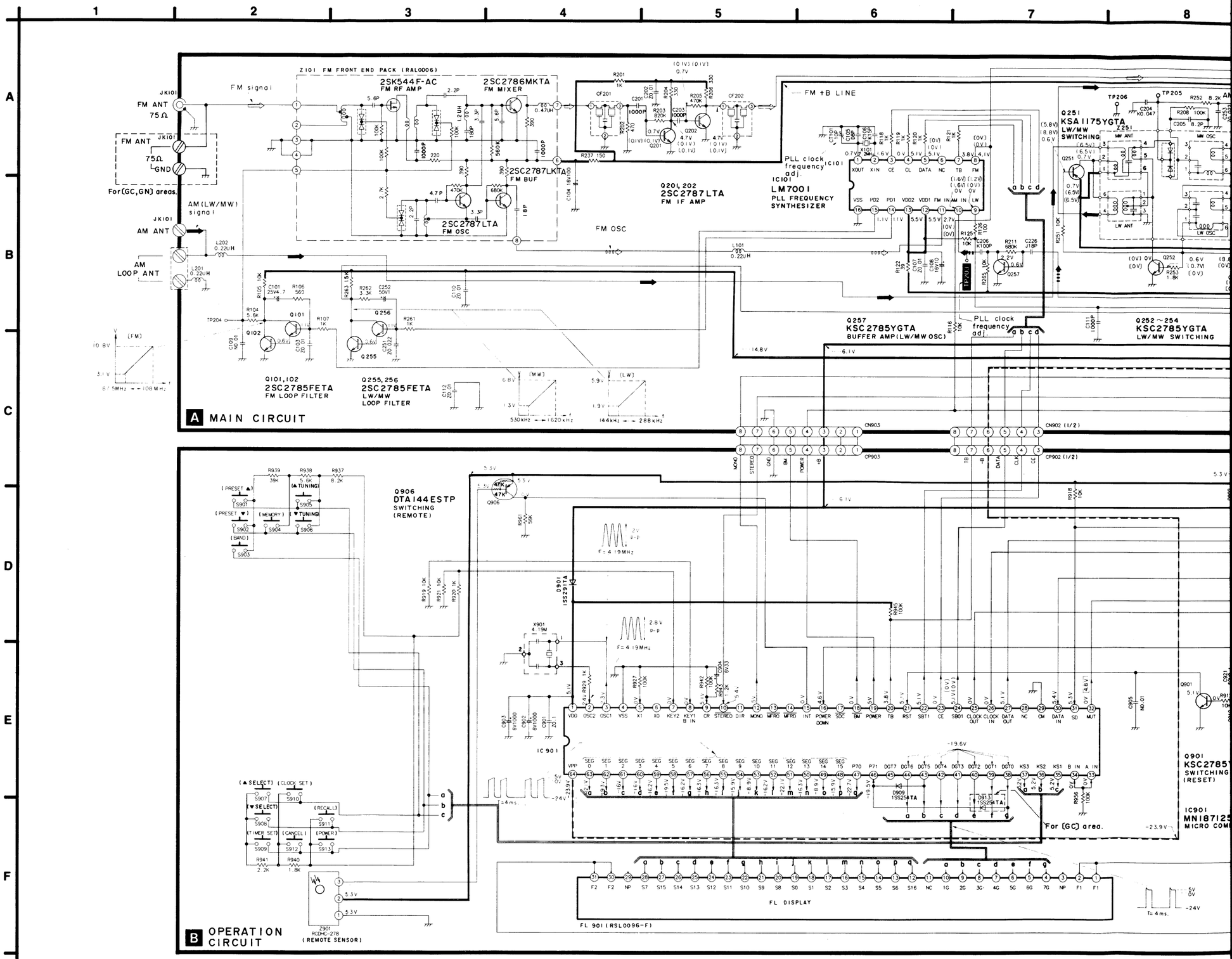
- ●Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
  ( ): MW voltage, [ ]: LW voltage, ▭: MUTING voltage
- ●Important safety notice
  Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
- ●**This schematic diagram may be modified at any time with the development of new technology.**

——— Positive voltage lines
▭▭▭▷ FM OSC
■■■■▶ AM OSC
– – – – Negative voltage lines
▭▭▭▷ FM signal
■■■■▶ AM signal
AF signal lines

·Caution!

IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.

- ·Cover the parts boxes made of plastics with aluminum coil.
- ·Ground the soldering iron.
- ·Put a conductive mat on the work table.
- ·Do not touch the legs of IC or LSI with the fingers directly.



8 9 10 11 12 13 14 15 16 17

Q251
KSA1175YGTA
LW/MW SWITCHING

Q208, 209
KSA1175YGTA
POWER SUPPLY (FM/LW/MW)

Q207
KSC2785YGTA
POWER SUPPLY CONT.

Q252~254
KSC2785YGTA
LW/MW SWITCHING

Q204
KSC2785YGTA
SIGNAL DETECTOR

IC201
AN7273W
FM/AM IF AMP DETECTOR

Q205
KSC2785YGTA
SWITCHING

IC301
RVIBA1332L
FM MPX

FM mono distortion adj.

FM offset voltage (0mV)

FM MPX VCO adj. (19kHz output)

FM MPX VCO adj

Q303, 304
2SC1740SQSTA
MUTING

AF signal

Q301, 302
KSC2785YGTA
BUFFER AMP

JK701

To SL-CH7/ SU-CH7

Q902, 903
DTC144ESTP
BUS LINE DRIVE

Q904, 905
KSC2785YGTA
BUS LINE DRIVE

Q901
KSC2785YGTA
SWITCHING (RESET)

Q907, 908
KSC2785YGTA
POWER DOWN DETECTOR

IC901
MN187125STTI
MICRO COMPUTER

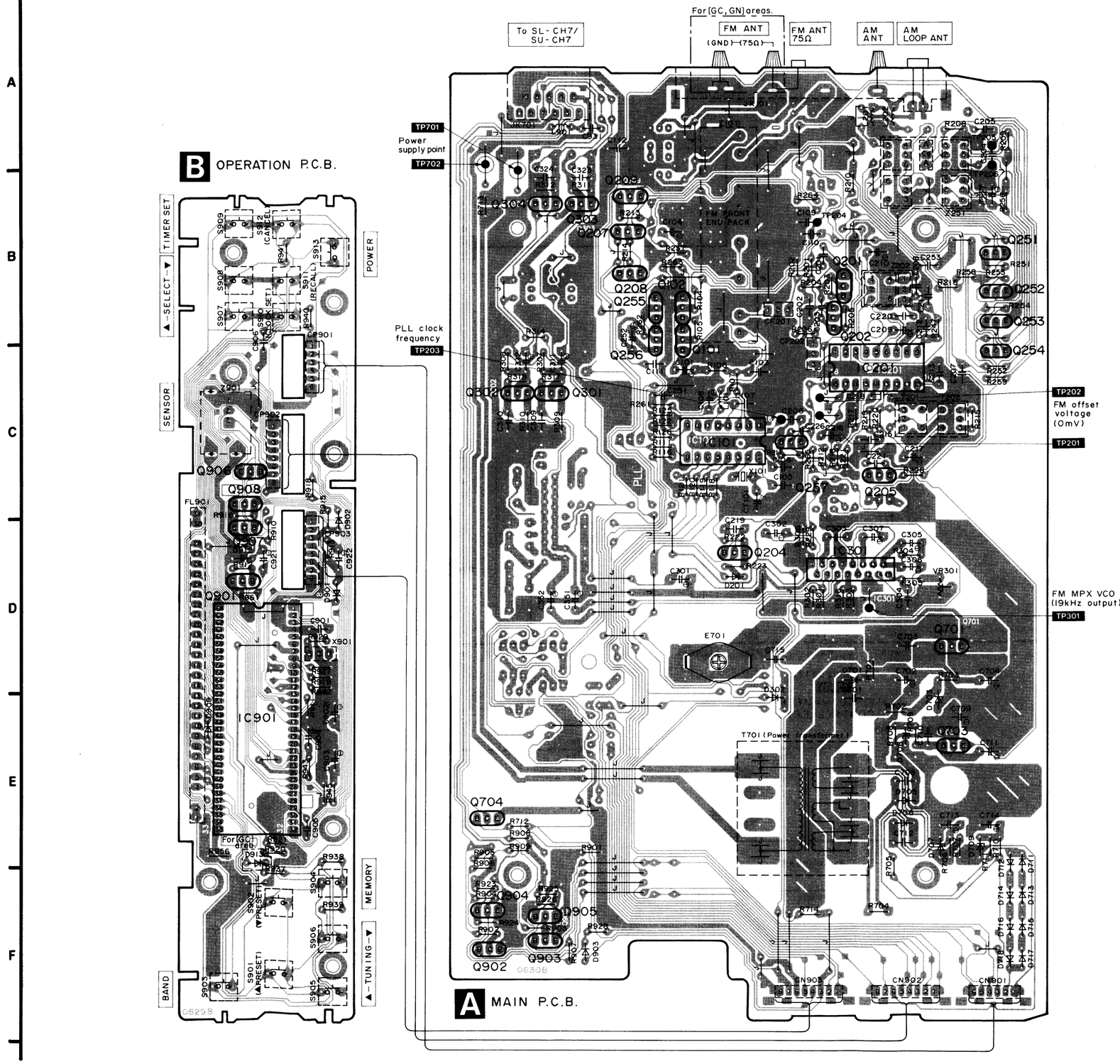
Q703
2SC1685RSTTA
REGULATOR

Q704
KSC2785YGTA
SWITCHING (POWER CONT.)

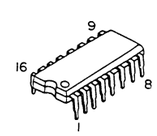
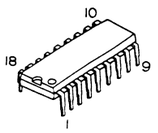
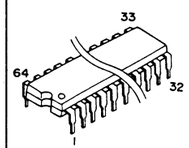
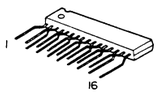
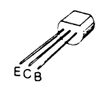
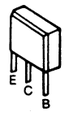
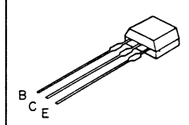
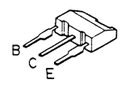
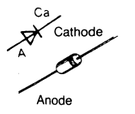
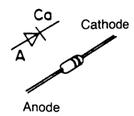
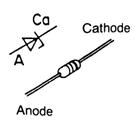
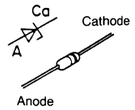
Q701
2SD1862QRTV6
REGULATOR

Power supply point

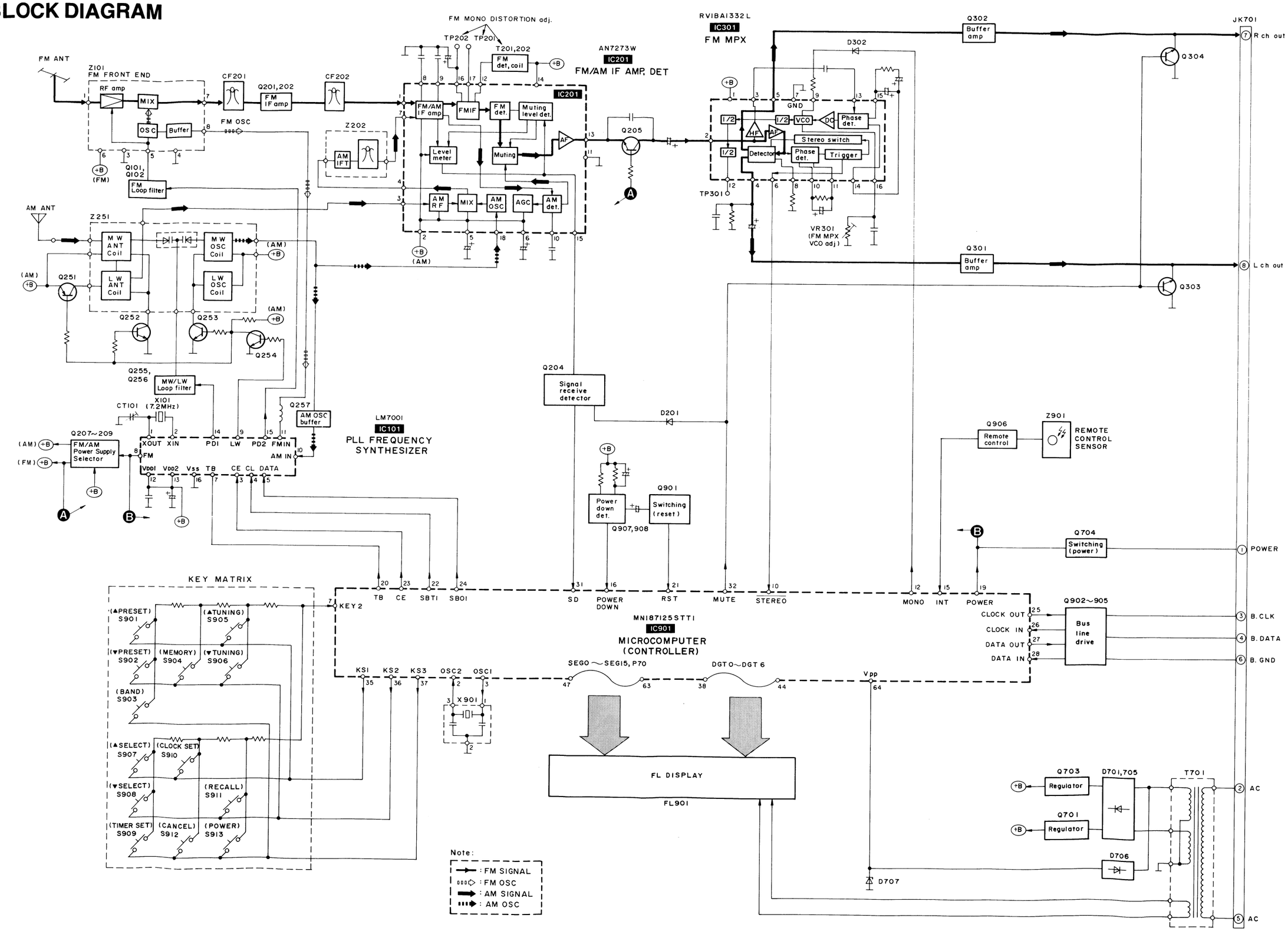
■ PRINTED CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM



●Terminal guide of IC's transistors and diodes

LM7001 	AN7273W 
MN187125STT1 	RVIBA1332L 
2SC1685RSTTA 	2SC2785FETA 2SC2787LTA 
2SC1740SQSTA KSA1175YGTA KSC2785YGTA DTC144ESTP 	
2SD1862QRTV6 	1SS254TA 1SR35200TB 
1SS291TA 	MA4047MTA MA4068MTA 
MA4240HTA MA4150MTA 	

■ BLOCK DIAGRAM



■ REPLACEMENT PARTS LIST

Notes : * Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
* The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)
Parts without these indications can be used for all areas.

Ref. No.	Part No.	Part Name & Description	Remarks
		INTEGRATED CIRCUIT(S)	
IC101	LM7001	I. C, PLL FREQENCY	
IC201	AN7273W	I. C, FM/AM IF AMP. DET	
IC301	RVIBA1332L	I. C, FM MPX	
IC901	MN187125STT1	I. C, MICRO COMPUTER	
		TRANSISTOR(S)	
Q101, 102	2SC2785FE	TRANSISTOR	
Q201, 202	2SC2787L	TRANSISTOR	
Q204, 205	KSC2785YGTA	TRANSISTOR	
Q207	KSC2785YGTA	TRANSISTOR	
Q208, 209	KSA1175YGTA	TRANSISTOR	
Q251	KSA1175YGTA	TRANSISTOR	
Q252-254	KSC2785YGTA	TRANSISTOR	
Q255, 256	2SC2785FE	TRANSISTOR	
Q257	KSC2785YGTA	TRANSISTOR	
Q301, 302	KSC2785YGTA	TRANSISTOR	
Q303, 304	2SC1740SQ	TRANSISTOR	
Q701	2SD1862QRTV6	TRANSISTOR	
Q703	2SC1685RSTTA	TRANSISTOR	
Q704	KSC2785YGTA	TRANSISTOR	
Q901	KSC2785YGTA	TRANSISTOR	
Q902, 903	DTC144EKT96	TRANSISTOR	
Q904, 905	KSC2785YGTA	TRANSISTOR	
Q906	DTA144ESTP	TRANSISTOR	
Q907, 908	KSC2785YGTA	TRANSISTOR	
		DIODE(S)	
D201	1SS291TA	DIODE	
D302	1SS254TA	DIODE	
D701	1SR35200TB	DIODE	⚠
D703	MA4068M	DIODE	
D705, 706	1SR35200TB	DIODE	⚠
D707	MA4240H	DIODE	
D708	MA4150M	DIODE	
D709	MA4047MTA	DIODE	
D711-718	1SS254TA	DIODE	
D901	1SS291TA	DIODE	
D902, 903	1SS254TA	DIODE	
D909	1SS254TA	DIODE	
D912	1SS254TA	DIODE	
D913	1SS254TA	DIODE	(GC)

Ref. No.	Part No.	Part Name & Description	Remarks
		VARIABLE RESISTOR(S)	
VR301	EVNDXAA00B14	V. R, FM MPX VCO ADJ.	
		COMPONENT COMBINATION(S)	
Z101	RAL0006	COMPONENT COMBINATION	
Z202	RLI2Z003M-T	COMPONENT COMBINATION	
Z251	RLA6Z002M-T	COMPONENT COMBINATION	
Z901	RCDHC-278	REMOTE SENSOR	
		COIL(S)	
L101	ELEXTR22MA9	COIL	
L201, 202	ELESNR22MA	COIL	
L901	ELEXT101KA9	COIL	
		TRANSFORMER(S)	
T201	RLI4B002M-Z	TRANSFORMER	
T202	RLI4B003M-Z	TRANSFORMER	
T701	RFKCTCH17N-K	POWER TRANSFORMER	⚠
		FILTER(S)	
CF201, 202	RLFFETWNA01L	CERAMIC FILTER	
		OSCILLATOR(S)	
X101	SVQ49U722-S	OSCILLATOR	
X901	EFOGC4194T4	OSCILLATOR	
		DISPLAY	
FL901	RSL0096-F	DISPLAY	
		SWITCH(ES)	
S901	EVQ21405R	SW, PRESET UP	
S902	EVQ21405R	SW, PRESET DOWN	
S903	EVQ21405R	SW, BAND	
S904	EVQ21405R	SW, MEMORY	
S905	EVQ21405R	SW, TUNING UP	
S906	EVQ21405R	SW, TUNING DOWN	
S907	EVQ21405R	SW, SELECT UP	
S908	EVQ21405R	SW, SELECT DOWN	
S909	EVQ21405R	SW, TIMER SET	

Ref. No.	Part No.	Part Name & Description	Remarks
S910	EVQ21405R	SW, CLOCK SET	
S911	EVQ21405R	SW, RECALL	
S912	EVQ21405R	SW, CANSEL	
S913	EVQ21405R	SW, POWER	
		CONNECTOR(S)	
CN901	RJU003K006M1	SOCKET(6P)	
CN902, 903	RJU003K008M1	SOCKET(8P)	
CP901	RJT003K006M1	CONNECTOR(6P)	
CP902, 903	RJT003K008M1	CONNECTOR(8P)	
		VARIABLE CAPACITOR	
CT101	RCV10AF1T-S	TRIMMER CAPACITOR	
		JACK(S)	
JK101	RJH4202M	ANT. TERMINAL BOARD	(E)
JK101	RJH4405-1M	ANT. TERMINAL BOARD	(GC, GN)
JK701	RJT055K011-1	CONTROL TERMINAL	

Notes : * Capacity valuse are in microfarads (uF) unless specified otherwise, P=Pico-farads(pF) F=Farads(F)
* Resistance values are in ohms, unless specified otherwise, 1K=1,000(OHM) , 1M=1,000k(OHM)

Ref. No.	Part No.	Values & Remarks
		RESISTORS
R104	ERDS2TJ562	1/4W 5.6K
R105	ERDS2TJ103	1/4W 10K
R106	ERDS2TJ561	1/4W 560
R107	ERDS2TJ102	1/4W 1K
R111	ERDS2TJ393	1/4W 39K
R116	ERDS2TJ103	1/4W 10K
R118-121	ERDS2TJ102	1/4W 1K
R122	ERDS2TJ390	1/4W 39
R125	ERDS2TJ103	1/4W 10K
R126	ERDS2TJ101	1/4W 100
R201	ERDS2TJ102	1/4W 1K
R202	ERDS2TJ471	1/4W 470
R203	ERDS2TJ824	1/4W 820K
R204	ERDS2TJ331	1/4W 330
R205	ERDS2TJ474	1/4W 470K
R206	ERDS2TJ331	1/4W 330
R208	ERDS2TJ104	1/4W 100K
R209	ERDS2TJ102	1/4W 1K
R210	ERDS2TJ122	1/4W 1.2K
R211	ERDS2TJ684	1/4W 680K
R212	ERDS2TJ474	1/4W 470K
R213	ERDS2TJ473	1/4W 47K
R214	ERDS2TJ103	1/4W 10K
R215	ERDS2TJ222	1/4W 2.2K
R216	ERDS2TJ102	1/4W 1K
R217	ERDS2TJ332	1/4W 3.3K
R218	ERDS2TJ103	1/4W 10K
R219	ERDS2TJ561	1/4W 560
R220	ERDS2TJ822	1/4W 8.2K
R221	ERDS2TJ560T	1/4W 56
R222	ERDS2TJ561	1/4W 560
R223	ERDS2TJ103	1/4W 10K
R228	ERDS2TJ104	1/4W 100K
R229	ERDS2TJ223	1/4W 22K
R237	ERDS2TJ151	1/4W 150
R247	ERDS2TJ103	1/4W 10K
R251	ERDS2TJ103	1/4W 10K
R252	ERDS2TJ822	1/4W 8.2K
R253	ERDS2TJ182	1/4W 1.8K
R254	ERDS2TJ223	1/4W 22K
R256	ERDS2TJ102	1/4W 1K
R258, 259	ERDS2TJ122	1/4W 1.2K
R261	ERDS2TJ102	1/4W 1K
R262	ERDS2TJ332	1/4W 3.3K
R263	ERDS2TJ153	1/4W 15K
R264	ERDS2TJ102	1/4W 1K

Ref. No.	Part No.	Values & Remarks
R265	ERDS2TJ103	1/4W 10K
R301, 302	ERDS2TJ562	1/4W 5.6K
R303	ERDS2TJ681	1/4W 680
R304	ERDS2TJ102	1/4W 1K
R305	ERDS2TJ682T	1/4W 6.8K
R306	ERDS2TJ390	1/4W 39
R307, 308	ERDS2TJ272T	1/4W 2.7K
R309, 310	ERDS2TJ102	1/4W 1K
R311, 312	ERDS2TJ104	1/4W 100K
R314	ERDS2TJ102	1/4W 1K
R316	ERDS2TJ103	1/4W 10K
R317, 318	ERDS2TJ274	1/4W 270K
R701	ERDS2TJ5R6	1/4W 5.6
R702	ERDS2TJ152	1/4W 1.5K
R703	ERDS2TJ331	1/4W 330
R704	ERDS1FVJ151T	1/2W 150 ⚠
R705	ERDS2TJ2R2T	1/4W 2.2
R706	ERDS2TJ561	1/4W 560
R707	ERDS2TJ331	1/4W 330
R708	ERDS2TJ272T	1/4W 2.7K
R709	ERDS2TJ561	1/4W 560
R710, 711	ERDS2TJ101	1/4W 100
R712	ERDS2TJ562	1/4W 5.6K
R713	ERDS2TJ1R0	1/4W 1.0
R714	ERDS2TJ100	1/4W 10
R901	ERDS2TJ100	1/4W 10
R902, 903	ERDS2TJ470	1/4W 47
R904	ERDS2TJ223	1/4W 22K
R905	ERDS2TJ470	1/4W 47
R906	ERDS2TJ103	1/4W 10K
R907	ERDS2TJ223	1/4W 22K
R908	ERDS2TJ470	1/4W 47
R909, 910	ERDS2TJ103	1/4W 10K
R911	ERDS2TJ333	1/4W 33K
R912	ERDS2TJ103	1/4W 10K
R913	ERDS2TJ223	1/4W 22K
R915	ERDS2TJ822	1/4W 8.2K
R916	ERDS2TJ122	1/4W 1.2K
R918, 919	ERDS2TJ103	1/4W 10K
R920	ERDS2TJ102	1/4W 1K
R921	ERDS2TJ103	1/4W 10K
R923-926	ERDS2TJ393	1/4W 39K
R927	ERDS2TJ104	1/4W 100K
R928	ERDS2TJ472	1/4W 4.7K
R929	ERDS2TJ102	1/4W 1K
R937	ERDS2TJ822	1/4W 8.2K
R938	ERDS2TJ562	1/4W 5.6K
R939	ERDS2TJ393	1/4W 39K
R940	ERDS2TJ182	1/4W 1.8K

Ref. No.	Part No.	Values & Remarks
R941	ERDS2TJ222	1/4W 2.2K
R942	ERDS2TJ104	1/4W 100K
R943	ERDS2TJ122	1/4W 1.2K
R945	ERDS2TJ104	1/4W 100K
R956	ERDS2TJ104	1/4W 100K
R961	ERDS2TJ563	1/4W 56K
		CAPACITORS
C101	ECEA1EK4R7	25V 4.7U
C103	ECKR1H103ZF5	50V 0.01U
C104	ECEA1CU101	16V 100U
C105	ECCR1H080DC5	50V 8P
C106	ECCR1H150KC5	50V 15P
C107	ECKR1H103ZF5	50V 0.01U
C108	ECEA1CK100B	16V 10U
C109	ECBT1C103NS5	16V 0.01U
C110	ECKR1H103ZF5	50V 0.01U
C111	ECBT1H102KB5	50V 1000P
C112	ECKR1H103ZF5	50V 0.01U
C201	ECBT1H102KB5	50V 1000P
C202	ECKR1H103ZF5	50V 0.01U
C203	ECBT1H102KB5	50V 1000P
C204	ECFR1E473KR	25V 0.047U
C205	ECBT1H8R2KC5	50V 8.2P
C206	ECCR1H101K5	50V 100P
C207	ECKT1H223ZF	50V 0.022U
C208	ECBT1H150JC5	50V 15P
C209	ECEA0JU101B	6.3V 100U
C210	ECEA1EK3R3B	25V 3.3U
C211	ECFR1E103KR	25V 0.01U
C212	ECKR1H103ZF5	50V 0.01U
C213	ECKT1H223ZF	50V 0.022U
C215	ECCR1H101K5	50V 100P
C216	ECEA1HK010B	50V 1U
C217	ECEA1CK100B	16V 10U
C218	ECKR1H103ZF5	50V 0.01U
C219	ECFR1E473KR	25V 0.047U
C220, 221	ECBT1C103NS5	16V 0.01U
C226	ECBT1H180JC5	50V 18P
C227	ECEA1CK100B	16V 10U
C251	ECBT1E223ZF	25V 0.022U
C252	ECEA1HK010B	50V 1U
C253	ECBT1E223ZF	25V 0.022U
C301	ECEA0JU102	6.3V 1000U
C302	ECEA1CK100B	16V 10U
C303	ECFR1E103KR	25V 0.01U
C304	ECQG1H102KZT	50V 1000P
C305	ECEA1HKR47	50V 0.47U

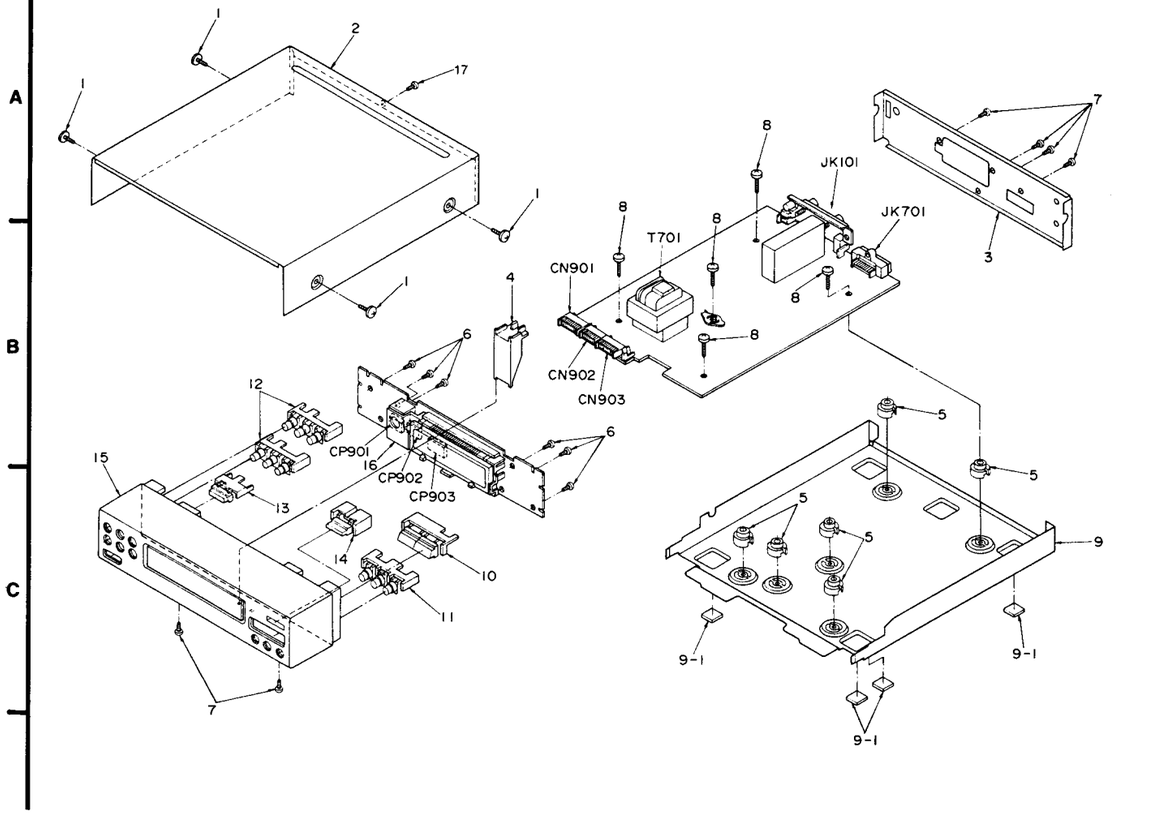
Ref. No.	Part No.	Values & Remarks
C306	ECEA1HKR33	50V 0.33U
C307	ECEA1HK010B	50V 1U
C309, 310	ECFR1E103KR	25V 0.01U
C311, 312	ECEA1HK010B	50V 1U
C323, 324	ECFR1E272KR	25V 2700P
C351, 352	ECEA1CK100B	16V 10U
C701	ECKR1H103ZF5	50V 0.01U
C702	ECEA1CU102B	16V 1000U
C703	ECKR1H103ZF5	50V 0.01U
C704	ECEA1AU221	10V 220U
C708	ECKR2H102ZF5	500V 1000P
C709	ECEA1VU331B	35V 330U
C710	ECKR1H103ZF5	50V 0.01U
C711	ECEA1CU101	16V 100U
C712	ECKR2H102ZF5	500V 1000P
C713	ECEA1HU220	50V 22U
C714	ECEA1HK010B	50V 1U
C715	ECKR1H103ZF5	50V 0.01U
C901	ECFR1H104ZF	50V 0.1U
C902, 903	ECEA0JU102	6.3V 1000U
C904	ECEA0JK330	6.3V 33U
C905, 906	ECBT1C103NS5	16V 0.01U
C921	ECEA1HKDR1	50V 0.1U
C922	ECEA1EK3R3B	25V 3.3U
C931	ECBA1H681KB5	50V 680P

Ref. No.	Part No.	Values & Remarks
C306	ECEA1HKR33	50V 0.33U
C307	ECEA1HK010B	50V 1U
C309, 310	ECFR1E103KR	25V 0.01U
C311, 312	ECEA1HK010B	50V 1U
C323, 324	ECFR1E272KR	25V 2700P
C351, 352	ECEA1CK100B	16V 10U
C701	ECKR1H103ZF5	50V 0.01U
C702	ECEA1CU102B	16V 1000U
C703	ECKR1H103ZF5	50V 0.01U
C704	ECEA1AU221	10V 220U
C708	ECKR2H102ZF5	500V 1000P
C709	ECEA1VU331B	35V 330U
C710	ECKR1H103ZF5	50V 0.01U
C711	ECEA1CU101	16V 100U
C712	ECKR2H102ZF5	500V 1000P
C713	ECEA1HU220	50V 22U
C714	ECEA1HK010B	50V 1U
C715	ECKR1H103ZF5	50V 0.01U
C901	ECFR1H104ZF	50V 0.1U
C902, 903	ECEA0JU102	6.3V 1000U
C904	ECEA0JK330	6.3V 33U
C905, 906	ECBT1C103NS5	16V 0.01U
C921	ECEA1HK0R1	50V 0.1U
C922	ECEA1EK3R3B	25V 3.3U
C931	ECBA1H681KB5	50V 680P

Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET PARTS	
1	RHD30007	SCREW	
2	RKM0158-K	CABINET	
3	RGR0116A-C	REAR PANEL	(E)
3	RGR0116A-D1	REAR PANEL	(GC, GN)
4	RMR0427	HOLDER	
5	SHE170-2	SPACER	
6	XTBS26+8J	SCREW	
7	XTBS3+8JFZ1	SCREW	
8	XTB3+12JFZ	SCREW	

Ref. No.	Part No.	Part Name & Description	Remarks
9	RFKJTCH7LE-K	CASSIS ASS'Y	
9-1	SHG1654	FOOT	
10	RGU0553-K	BUTTON, PRESET	
11	RGU0554-K	BUTTON, TUNING	
12	RGU0555-A	BUTTON, TIMER	
13	RGU0556-K	BUTTON, POWER	
14	RGU0557-K	BUTTON, BAND SELECT	
15	RFKGTCH7LE-K	FRONT PANEL ASS'Y	(E)
15	RFKGTCH7LGCK	FRONT PANEL ASS'Y	(GC, GN)
16	RMN0123	FL HOLDER	
17	XTB3+8JFZ	SCREW	

■ CABINET PARTS LOCATION



Printed in Japan
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ORDER NO. AD9104109A2

Service Manual

Simplified

LW/MW/FM Stereo Tuner

Tuner

ST-CH7L

Color

(K)	Black Type

- Please file and use this manual together with the service manual for model No. ST-CH7L Order No. AD9104083C8.
- This service manual indicates the main differences between; Original ST-CH7L (E) and ST-CH7L (EG).
- Refer to the Schematic Diagram, Block Diagram, Circuit Board and Wiring Connection Diagram of this Service Manual.

Area

Country Code	Area	Color
(EG)	F.R. Germany and Italy	(K)

System: SC-CH7

Because of unique interconnecting cables, when a component requires service, send or bring in the entire system.

CHANGES

■ CHANGE IN REPLACEMENT PARTS LIST

Note: Mentioned in this parts list of cabinet parts are only those different from Model No. ST-CH7L (E); all other cabinet parts are the same as for ST-CH7L (E), and accessories are only those different from Model No. SU-CH7 (E) Order No. AD9104082C8; all other accessories are the same as for SU-CH7 (E).
For the electrical parts, see page 11 through 14 of this service manual for ST-CH7L (EG).

•ST-CH7L (Page 21 of service manual.)/SU-CH7 (Page 36 of service manual.)

Ref. No.	Change of Part No.		Part Name & Description	Remarks
	ST-CH7L (E)	**ST-CH7L (EG)**		
CABINET PARTS				
3	RGR0116A-C	**RGR0116A-E1**	REAR PANEL	
PACKING MATERIAL				
P1	RPG0925	**RPG1045**	PACKING CASE	SYSTEM
ACCESSORIES				
A1	RQF1125	**RQF1127**	INST. MANUAL ASS'Y	
A1–1	RFKSUCH7E-K	**RQT1035-D**	INSTRUCTIONS MANUAL	

System	Tuner	Amplifier	CD Player	Cassette Deck	Speakers
SC-CH7	ST-CH7L	SU-CH7	SL-CH7	RS-CH7	SB-CH7

Technics

■ MEASUREMENTS AND ADJUSTMENTS

FM ADJUSTMENT

Control positions and equipment used
- FM signal generator (FM-SG)
- Stereo modulator
- Distortion analyser
- DC electronic voltmeter (EVM)
- Frequency counter
- Choke coil (100 μH)
- Resistor (100 kΩ)

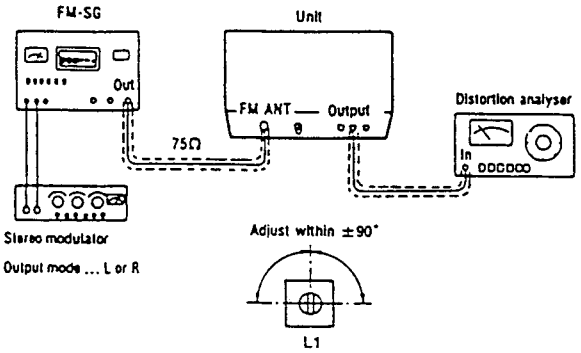
Note: For L321, L322, L324, Z321, Z251 (AM-ANT/OSC) and Z202 (AM-IFT), they are supplied as adjusted parts. So, do not turn the cores of the parts.
It is not necessary to adjust the AM circuit.

FM STEREO DISTORTION ADJUSTMENT

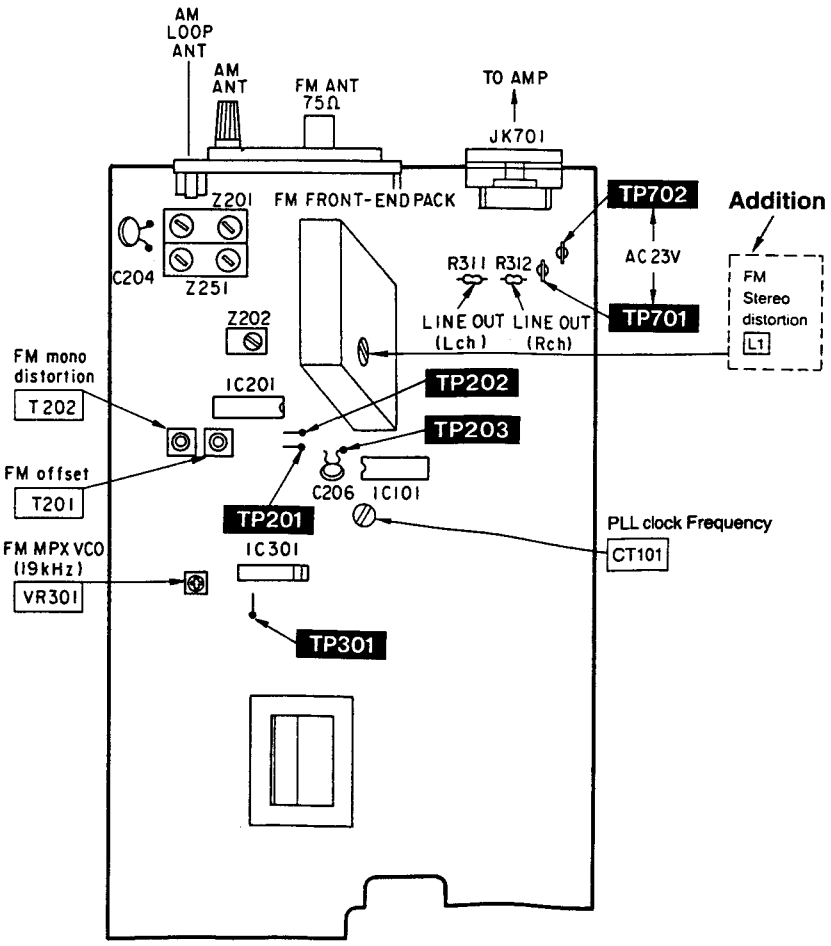
1. Test equipment connection is shown in figure.
2. Set the unit to "FM" mode.
3. Set the radio frequency display and signal generator to 100.10MHz.
4. Adjust L1 so that the distortion factor of L-CH is minimized.
5. Make sure that the distortion factors of L-CH and R-CH are nearly the same with each other to minimum.

Notes:
1. The adjusting screwdriver used should be made of resin.
2. L1 should be rotated no more 1/4 turn (90 deg.) on either side.

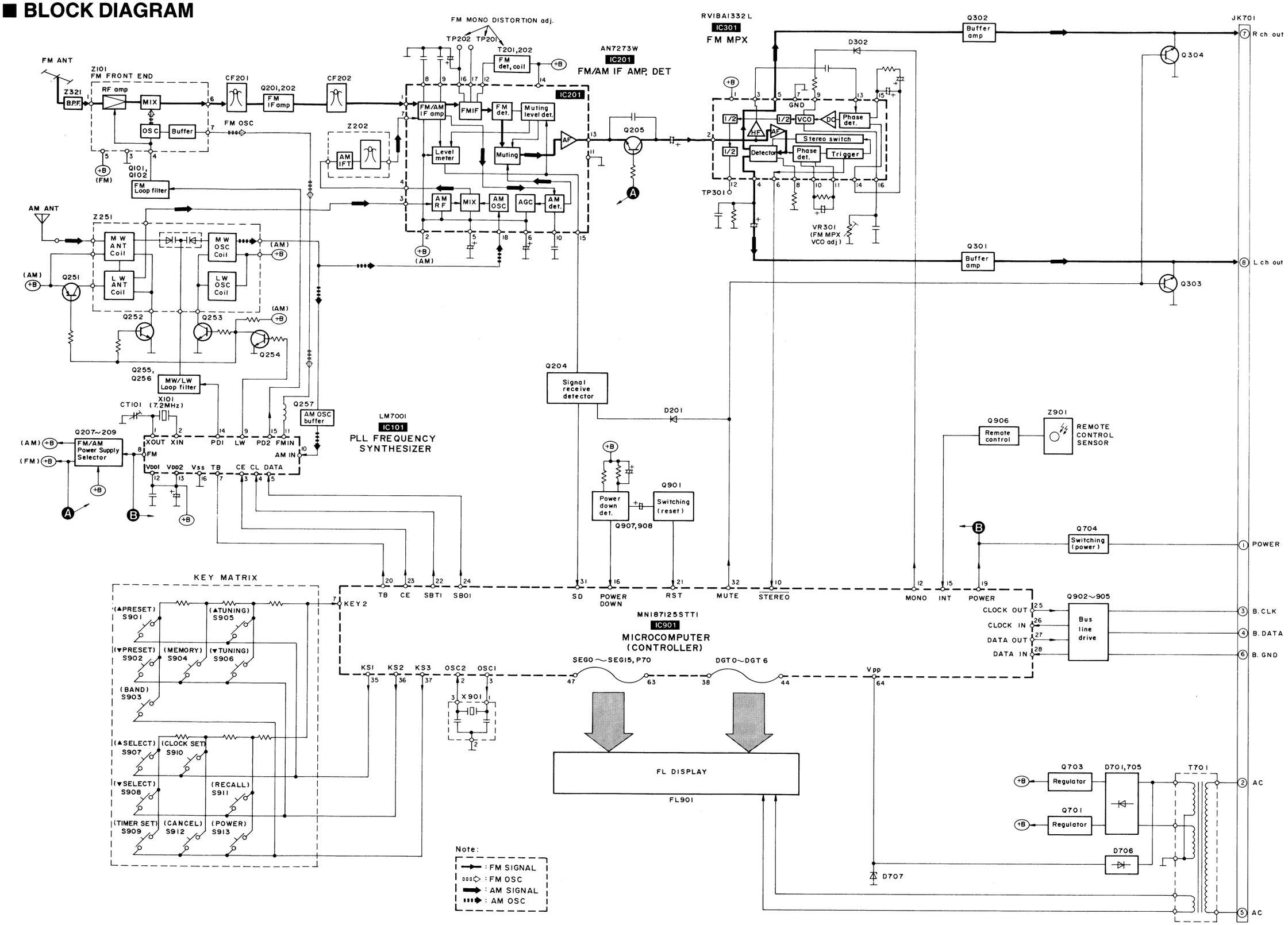
FM SIGNAL GENERATOR CONDITION
Modulation.....Stereo "L" mode or "R" mode 45%, Pilot 10%
Modulation frequency.....1kHz (Pilot 19kHz)
Output level.....66dB



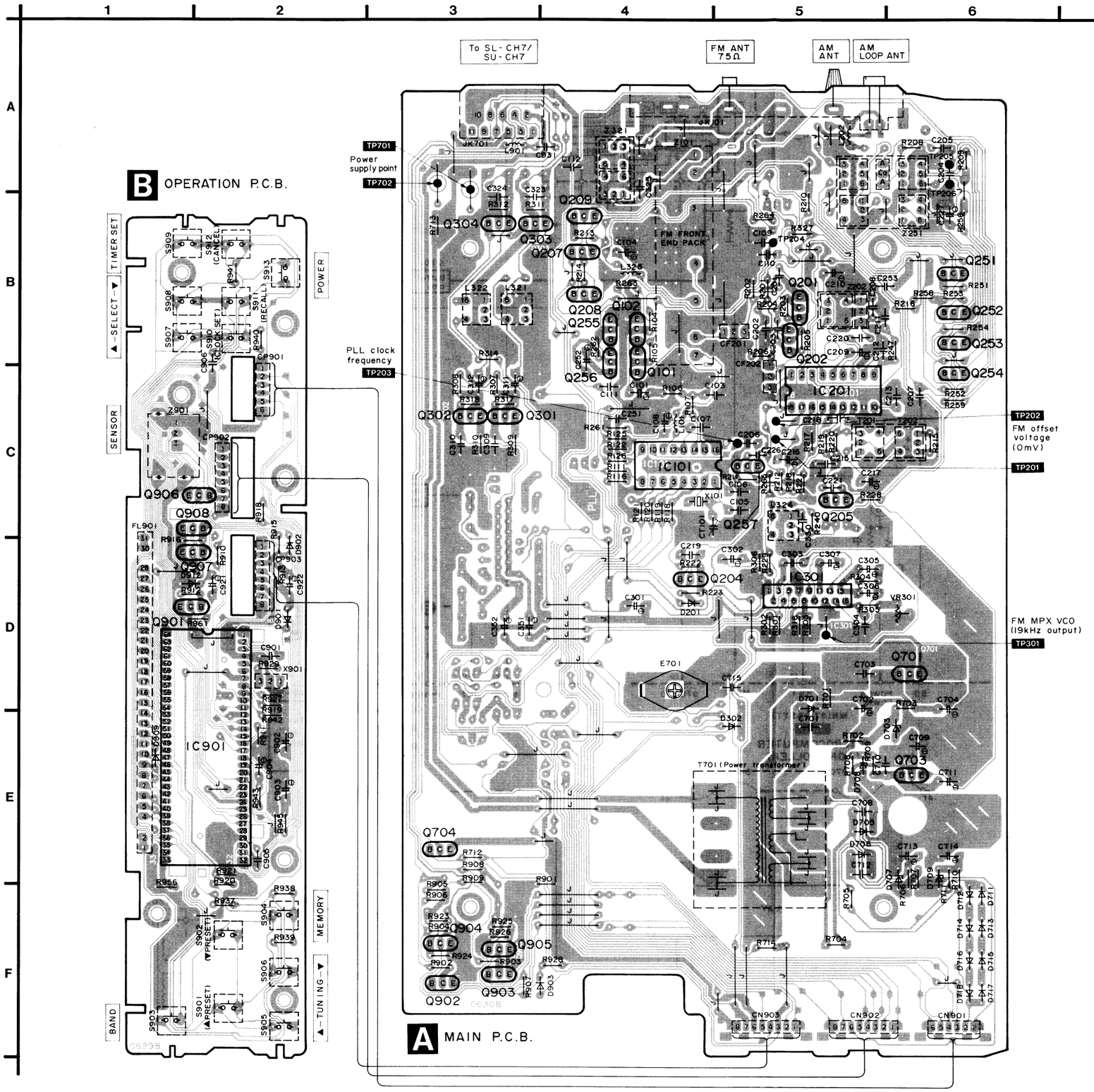
●ADJUSTMENT POINTS



■ BLOCK DIAGRAM



■ PRINTED CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM (Parts list on pages 11~14.)



●Terminal guide of IC's transistors and diodes

LM7001	AN7273W
MN187125STT1	RVIBA1332L
2SC1685RSTTA	2SC2785FETA 2SC2787LTA
2SC1740SQSTA KSA1175YGTA KSC2785YGTA DTC144ESTP	
2SD1862QRTV6	1SS254TA 1SR35200TB
1SS291TA	MA4047MTA MA4068MTA
MA4240HTA MA4150MTA	

■ SCHEMATIC DIAGRAM (Parts list on pages 11~14.)

Notes:

- ●S901, 902 : Preset channel switch. (S901: Up, S902: Down)
- ●S903 : Band select switch.
- ●S904 : Memory switch.
- ●S905, 906 : Tuning switch. (S905: Up, S906: Down)
- ●S907, 908 : Timer select Switch. (S907: Up, S908: Down)
- ●S909 : Timer set switch.
- ●S910 : Clock set switch.
- ●S911 : Timer setting confirmatin switch.
- ●S912 : Timer cancel switch.
- ●S913 : Power switch.

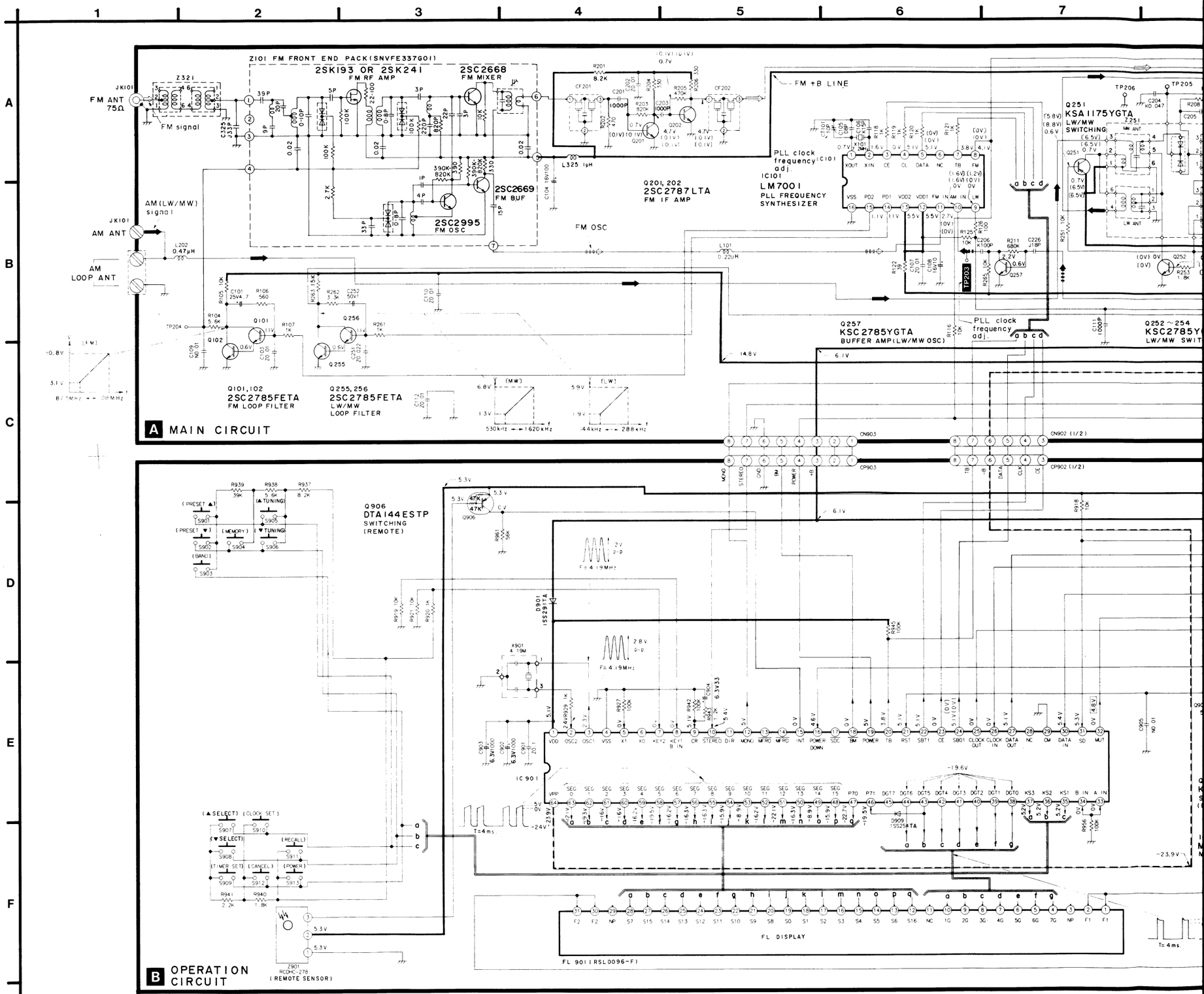
●Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
( ): MW voltage, [ ]: LW voltage, ▭: MUTING voltage

●Important safety notice
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

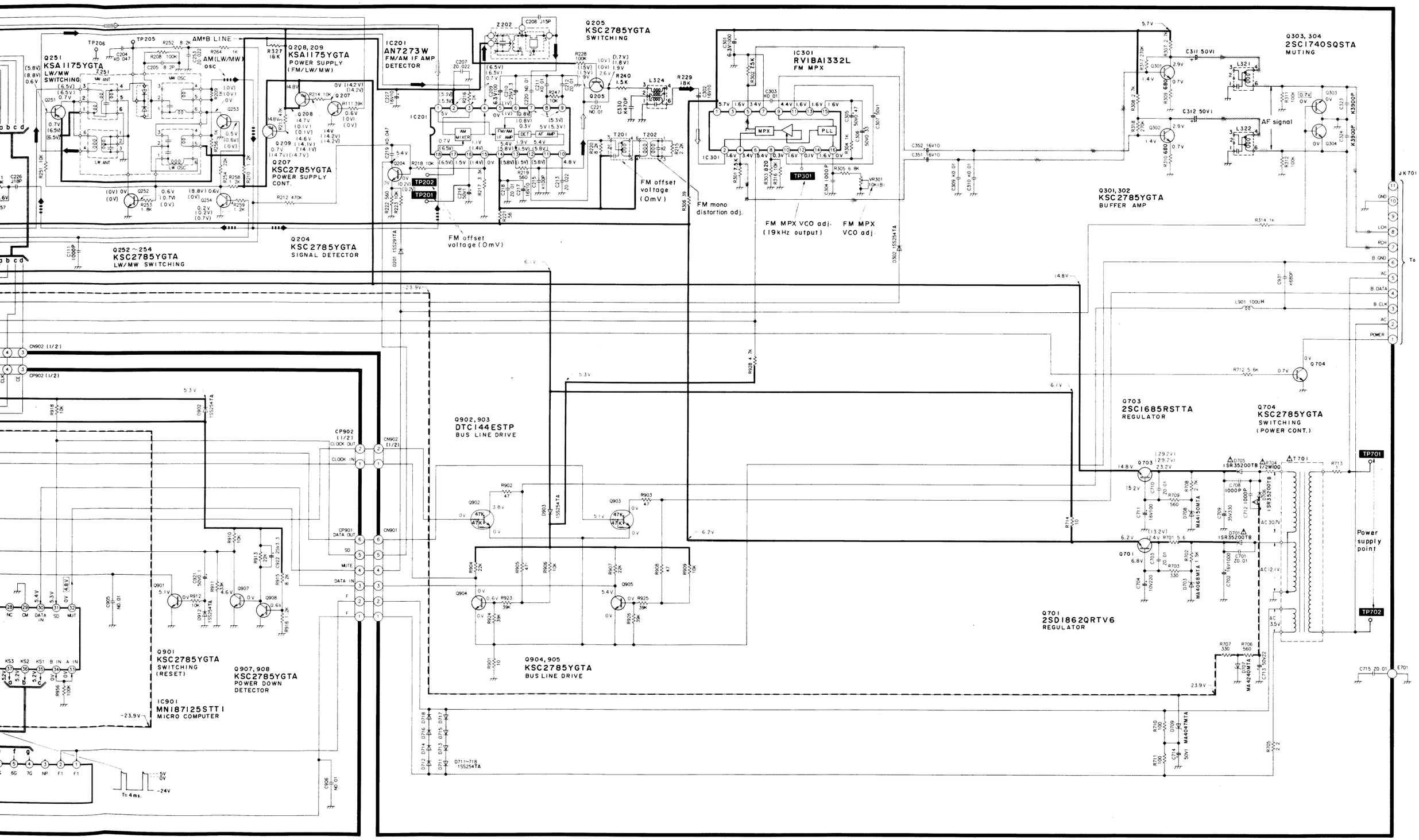
●**This schematic diagram may be modified at any time with the development of new technology.**

Positive voltage lines — Negative voltage lines
FM OSC — FM signal
AM OSC — AM signal
AF signal lines

•Caution!
IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.
- •Cover the parts boxes made of plastics with aluminum coil.
- •Ground the soldering iron.
- •Put a conductive mat on the work table.
- •Do not touch the legs of IC or LSI with the fingers directly.



7 8 9 10 11 12 13 14 15 16 17



■ REPLACEMENT PARTS LIST

Notes : * Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
* The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)
Parts without these indications can be used for all areas.

Ref. No.	Part No.	Part Name & Description	Remarks
		INTEGRATED CIRCUIT(S)	
IC101	LM7001	I. C, PLL FREQENCY	
IC201	AN7273W	I. C, FM/AM IF AMP. DET	
IC301	RVIBA1332L	I. C, FM MPX	
IC901	MN187125STT1	I. C, MICRO COMPUTER	
		TRANSISTOR(S)	
Q101, 102	2SC2785FE	TRANSISTOR	
Q201, 202	2SC2787L	TRANSISTOR	
Q204, 205	KSC2785YGTA	TRANSISTOR	
Q207	KSC2785YGTA	TRANSISTOR	
Q208, 209	KSA1175YGTA	TRANSISTOR	
Q251	KSA1175YGTA	TRANSISTOR	
Q252-254	KSC2785YGTA	TRANSISTOR	
Q255, 256	2SC2785FE	TRANSISTOR	
Q257	KSC2785YGTA	TRANSISTOR	
Q301, 302	KSC2785YGTA	TRANSISTOR	
Q303, 304	2SC1740SQ	TRANSISTOR	
Q701	2SD1862QRTV6	TRANSISTOR	
Q703	2SC1685RSTTA	TRANSISTOR	
Q704	KSC2785YGTA	TRANSISTOR	
Q901	KSC2785YGTA	TRANSISTOR	
Q902, 903	DTC144EKT96	TRANSISTOR	
Q904, 905	KSC2785YGTA	TRANSISTOR	
Q906	DTA144ESTP	TRANSISTOR	
Q907, 908	KSC2785YGTA	TRANSISTOR	
		DIODE(S)	
D201	1SS291TA	DIODE	
D302	1SS254TA	DIODE	
D701	1SR35200TB	DIODE	⚠
D703	MA4068M	DIODE	
D705, 706	1SR35200TB	DIODE	⚠
D707	MA4240H	DIODE	
D708	MA4150M	DIODE	
D709	MA4047MTA	DIODE	
D711-718	1SS254TA	DIODE	
D901	1SS291TA	DIODE	
D902, 903	1SS254TA	DIODE	
D909	1SS254TA	DIODE	
D912	1SS254TA	DIODE	
		VARIABLE RESISTOR(S)	

Ref. No.	Part No.	Part Name & Description	Remarks
VR301	EVNDXAA00B14	V. R, FM MPX VCO ADJ.	
		COMPONENT COMBINATION(S)	
Z101	SNVFE337G01	COMPONENT COMBINATION	
Z202	RLI2Z003M-T	COMPONENT COMBINATION	
Z251	RLA6Z002M-T	COMPONENT COMBINATION	
Z321	SLA4Z13M-Z	COMPONENT COMBINATION	
Z901	RCDHC-278	REMOTE SENSOR	
		COIL(S)	
L101	ELEXTR22MA9	COIL	
L202	ELESNR47MA	COIL	
L321, 322	RLM2B003M-K	COIL	
L324	SLM1B10M-1M	COIL	
L325	ELEXT1R0KA9	COIL	
L901	ELEXT101KA9	COIL	
		TRANSFORMER(S)	
T201	RLI4B002M-Z	TRANSFORMER	
T202	RLI4B003M-Z	TRANSFORMER	
T701	RFKCTCH7N-K	POWER TRANSFORMER	⚠
		FILTER(S)	
CF201	RLFFETNGA01L	CERAMIC FILTER	
CF202	RLFFETNGA02L	CERAMIC FILTER	
		OSCILLATOR(S)	
X101	SVQ49U722-S	OSCILLATOR	
X901	EFOGC4194T4	OSCILLATOR	
		DISPLAY	
FL901	RSL0096-F	DISPLAY	
		SWITCH(ES)	
S901	EVQ21405R	SW, PRESET UP	
S902	EVQ21405R	SW, PRESET DOWN	
S903	EVQ21405R	SW, BAND	
S904	EVQ21405R	SW, MEMORY	
S905	EVQ21405R	SW, TUNING UP	

Ref. No.	Part No.	Part Name & Description	Remarks
S906	EVQ21405R	SW, TUNING DOWN	
S907	EVQ21405R	SW, SELECT UP	
S908	EVQ21405R	SW, SELECT DOWN	
S909	EVQ21405R	SW, TIMER SET	
S910	EVQ21405R	SW, CLOCK SET	
S911	EVQ21405R	SW, RECALL	
S912	EVQ21405R	SW, CANSEL	
S913	EVQ21405R	SW, POWER	
		CONNECTOR(S)	
CN901	RJU003K006M1	SOCKET(6P)	
CN902, 903	RJU003K008M1	SOCKET(8P)	
CP901	RJT003K006M1	CONNECTOR(6P)	
CP902, 903	RJT003K008M1	CONNECTOR(8P)	
		VARIABLE CAPACITOR	
CT101	RCV10AF1T-S	TRIMMER CAPACITOR	
		JACK(S)	
JK101	RJH4202M	ANT. TERMINAL BOARD	
JK701	RJT055K011-1	CONTROL TERMINAL	

Notes : * Capa
* Resi

Ref. No.	Part N
R104	ERDS2TJ5
R105	ERDS2TJ1
R106	ERDS2TJ5
R107	ERDS2TJ1
R111	ERDS2TJ3
R116	ERDS2TJ1
R118-121	ERDS2TJ1
R122	ERDS2TJ3
R125	ERDS2TJ1
R126	ERDS2TJ1
R201	ERDS2TJ8
R202	ERDS2TJ4
R203	ERDS2TJ8
R204	ERDS2TJ3
R205	ERDS2TJ4
R206	ERDS2TJ3
R208	ERDS2TJ1
R209	ERDS2TJ1
R210	ERDS2TJ1
R211	ERDS2TJ6
R212	ERDS2TJ4
R213	ERDS2TJ4
R214	ERDS2TJ1
R215	ERDS2TJ2
R216	ERDS2TJ1
R217	ERDS2TJ3
R218	ERDS2TJ1
R219	ERDS2TJ5
R220	ERDS2TJ8
R221	ERDS2TJ5
R222	ERDS2TJ5
R223	ERDS2TJ1
R228	ERDS2TJ1
R229	ERDS2TJ1
R240	ERDS2TJ1
R247	ERDS2TJ1
R251	ERDS2TJ1
R252	ERDS2TJ8
R253	ERDS2TJ1
R254	ERDS2TJ2
R256	ERDS2TJ1
R258, 259	ERDS2TJ1
R261	ERDS2TJ1
R262	ERDS2TJ3
R263	ERDS2TJ1
R264	ERDS2TJ1

Notes : • Capacity valuse are in microfarads (uF) unless specified otherwise, P=Pico-farads(pF) F=Farads(F)
• Resistance values are in ohms, unless specified otherwise, 1K=1,000(OHM) , 1M=1,000k(OHM)

Ref. No.	Part No.	Values & Remarks
		RESISTORS
R104	ERDS2TJ562	1/4W 5.6K
R105	ERDS2TJ103	1/4W 10K
R106	ERDS2TJ561	1/4W 560
R107	ERDS2TJ102	1/4W 1K
R111	ERDS2TJ393	1/4W 39K
R116	ERDS2TJ103	1/4W 10K
R118-121	ERDS2TJ102	1/4W 1K
R122	ERDS2TJ390	1/4W 39
R125	ERDS2TJ103	1/4W 10K
R126	ERDS2TJ101	1/4W 100
R201	ERDS2TJ822T	1/4W 8.2K
R202	ERDS2TJ471	1/4W 470
R203	ERDS2TJ824	1/4W 820K
R204	ERDS2TJ331	1/4W 330
R205	ERDS2TJ474	1/4W 470K
R206	ERDS2TJ331	1/4W 330
R208	ERDS2TJ104	1/4W 100K
R209	ERDS2TJ102	1/4W 1K
R210	ERDS2TJ122	1/4W 1.2K
R211	ERDS2TJ684	1/4W 680K
R212	ERDS2TJ474	1/4W 470K
R213	ERDS2TJ473	1/4W 47K
R214	ERDS2TJ103	1/4W 10K
R215	ERDS2TJ222	1/4W 2.2K
R216	ERDS2TJ102	1/4W 1K
R217	ERDS2TJ332	1/4W 3.3K
R218	ERDS2TJ103	1/4W 10K
R219	ERDS2TJ561	1/4W 560
R220	ERDS2TJ822	1/4W 8.2K
R221	ERDS2TJ560T	1/4W 56
R222	ERDS2TJ561	1/4W 560
R223	ERDS2TJ103	1/4W 10K
R228	ERDS2TJ104	1/4W 100K
R229	ERDS2TJ183	1/4W 18K
R240	ERDS2TJ152T	1/4W 1.5K
R247	ERDS2TJ103	1/4W 10K
R251	ERDS2TJ103	1/4W 10K
R252	ERDS2TJ822	1/4W 8.2K
R253	ERDS2TJ182	1/4W 1.8K
R254	ERDS2TJ223	1/4W 22K
R256	ERDS2TJ102	1/4W 1K
R258, 259	ERDS2TJ122	1/4W 1.2K
R261	ERDS2TJ102	1/4W 1K
R262	ERDS2TJ332	1/4W 3.3K
R263	ERDS2TJ153	1/4W 15K
R264	ERDS2TJ102	1/4W 1K

Ref. No.	Part No.	Values & Remarks
R265	ERDS2TJ103	1/4W 10K
R301, 302	ERDS2TJ752T	1/4W 7.5K
R303	ERDS2TJ821T	1/4W 820
R304	ERDS2TJ102	1/4W 1K
R305	ERDS2TJ682T	1/4W 6.8K
R306	ERDS2TJ390	1/4W 39
R307, 308	ERDS2TJ272T	1/4W 2.7K
R309, 310	ERDS2TJ681T	1/4W 680
R311, 312	ERDS2TJ104	1/4W 100K
R314	ERDS2TJ102	1/4W 1K
R316	ERDS2TJ103	1/4W 10K
R317, 318	ERDS2TJ274	1/4W 270K
R327	ERDS2TJ183T	1/4W 18K
R701	ERDS2TJ5R6	1/4W 5.6
R702	ERDS2TJ152	1/4W 1.5K
R703	ERDS2TJ331	1/4W 330
R704	ERDS1FVJ101T	1/2W 100 ⚠
R705	ERDS2TJ2R2T	1/4W 2.2
R706	ERDS2TJ561	1/4W 560
R707	ERDS2TJ331	1/4W 330
R708	ERDS2TJ272T	1/4W 2.7K
R709	ERDS2TJ561	1/4W 560
R710, 711	ERDS2TJ101	1/4W 100
R712	ERDS2TJ562	1/4W 5.6K
R713	ERDS2TJ1R0	1/4W 1.0
R714	ERDS2TJ100	1/4W 10
R901	ERDS2TJ100	1/4W 10
R902, 903	ERDS2TJ470	1/4W 47
R904	ERDS2TJ223	1/4W 22K
R905	ERDS2TJ470	1/4W 47
R906	ERDS2TJ103	1/4W 10K
R907	ERDS2TJ223	1/4W 22K
R908	ERDS2TJ470	1/4W 47
R909, 910	ERDS2TJ103	1/4W 10K
R911	ERDS2TJ333	1/4W 33K
R912	ERDS2TJ103	1/4W 10K
R913	ERDS2TJ223	1/4W 22K
R915	ERDS2TJ822	1/4W 8.2K
R916	ERDS2TJ122	1/4W 1.2K
R918, 919	ERDS2TJ103	1/4W 10K
R920	ERDS2TJ102	1/4W 1K
R921	ERDS2TJ103	1/4W 10K
R923-926	ERDS2TJ393	1/4W 39K
R927	ERDS2TJ104	1/4W 100K
R928	ERDS2TJ472	1/4W 4.7K
R929	ERDS2TJ102	1/4W 1K
R937	ERDS2TJ822	1/4W 8.2K
R938	ERDS2TJ562	1/4W 5.6K
R939	ERDS2TJ393	1/4W 39K

Ref. No.	Part No.	Values & Remarks
R940	ERDS2TJ182	1/4W 1.8K
R941	ERDS2TJ222	1/4W 2.2K
R942	ERDS2TJ104	1/4W 100K
R943	ERDS2TJ122	1/4W 1.2K
R945	ERDS2TJ104	1/4W 100K
R956	ERDS2TJ104	1/4W 100K
R961	ERDS2TJ563	1/4W 56K
		CAPACITORS
C101	ECEA1EK4R7	25V 4.7U
C103	ECKR1H103ZF5	50V 0.01U
C104	ECEA1CU101	16V 100U
C105	ECCR1H080DC5	50V 8P
C106	ECCR1H150KC5	50V 15P
C107	ECKR1H103ZF5	50V 0.01U
C108	ECEA1CK100B	16V 10U
C109	ECBT1C103NS5	16V 0.01U
C110	ECKR1H103ZF5	50V 0.01U
C111	ECBT1H102KB5	50V 1000P
C112	ECKR1H103ZF5	50V 0.01U
C201	ECBT1H102KB5	50V 1000P
C202	ECKR1H103ZF5	50V 0.01U
C203	ECBT1H102KB5	50V 1000P
C204	ECFR1E473KR	25V 0.047U
C205	ECBT1H8R2KC5	50V 8.2P
C206	ECCR1H101K5	50V 100P
C207	ECKT1H223ZF	50V 0.022U
C208	ECBT1H150JC5	50V 15P
C209	ECEA0JU101B	6.3V 100U
C210	ECEA1EK3R3B	25V 3.3U
C211	ECFR1E103KR	25V 0.01U
C212	ECKR1H103ZF5	50V 0.01U
C213	ECKT1H223ZF	50V 0.022U
C215	ECCR1H101K5	50V 100P
C216	ECEA1HK010B	50V 1U
C217	ECEA1CK100B	16V 10U
C218	ECKR1H103ZF5	50V 0.01U
C219	ECFR1E473KR	25V 0.047U
C220, 221	ECBT1C103NS5	16V 0.01U
C226	ECBT1H180JC5	50V 18P
C227	ECEA1CK100B	16V 10U
C251	ECBT1E223ZF	25V 0.022U
C252	ECEA1HK010B	50V 1U
C253	ECBT1E223ZF	25V 0.022U
C301	ECEA0JU102	6.3V 1000U
C302	ECEA1CK100B	16V 10U
C303	ECFR1E103KR	25V 0.01U
C304	ECQG1H102KZT	50V 1000P

Ref. No.	Part No.	Values & Remarks
C305	ECEA1HKR47	50V 0.47U
C306	ECEA1HKR33	50V 0.33U
C307	ECEA1HK010B	50V 1U
C309, 310	ECFR1E103KR	25V 0.01U
C311, 312	ECEA1HK010B	50V 1U
C323, 324	ECFR1E392KR	25V 3900P
C325	ECBT1H330J5	50V 33U
C330	ECBT1H471KB5	50V 470U
C351, 352	ECEA1CK100B	16V 10U
C701	ECKR1H103ZF5	50V 0.01U
C702	ECEA1CU102B	16V 1000U
C703	ECKR1H103ZF5	50V 0.01U
C704	ECEA1AU221	10V 220U
C708	ECKR2H102ZF5	500V 1000P
C709	ECEA1VU331B	35V 330U
C710	ECKR1H103ZF5	50V 0.01U
C711	ECEA1CU101	16V 100U
C712	ECKR2H102ZF5	500V 1000P
C713	ECEA1HU220	50V 22U
C714	ECEA1HK010B	50V 1U
C715	ECKR1H103ZF5	50V 0.01U
C901	ECFR1H104ZF	50V 0.1U
C902, 903	ECEA0JU102	6.3V 1000U
C904	ECEA0JK330	6.3V 33U
C905, 906	ECBT1C103NS5	16V 0.01U
C921	ECEA1HK0R1	50V 0.1U
C922	ECEA1EK3R3B	25V 3.3U
C931	ECBA1H681KB5	50V 680P

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